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Connecticut Inland Fisheries

Lake and Large River Angler Surveys



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Inland Fisheries Division



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Cover photo: Cassie Ganio with a Largemouth Bass caught on the Bantam River in Torrington, CT. Photo by Christian Anderson.

Summary

The Connecticut Department of Energy and Environmental Protection Inland Fisheries Division (IFD) conducted angler surveys on 12 Connecticut lakes during 2014-15. These surveys compiled data on fishing effort, catch and harvest of various fish species, and angler opinions on IFD management practices. Bass and trout attracted the majority of open water fishing effort. IFD stockings of Channel Catfish, Kokanee Salmon and Walleye have been successful in generating open water angler participation in some lakes. Ice anglers enjoyed a prolonged period of safe ice extending from January-March at all four lakes surveyed during the ice fishing season. Fisheries created by IFD stockings of Northern Pike and trout attracted the majority of ice angler participation at the four lakes surveyed.

Background

Angler surveys are an indispensable component of IFD management programs. These surveys provide vital information on angler use of various fisheries and angler feedback on current management practices. IFD has a long history of conducting angler surveys on lakes and large rivers, but these surveys were typically conducted under the auspices of individual management and monitoring projects. In 2011, IFD initiated a centralized Lake and Large River Angler Survey Job that is charged with collecting and archiving angler survey data from lakes and large rivers using standardized survey methods that will ensure comparability of data across locations and years. This report details work conducted by the Lake and Large River Angler Survey Job during 2014-15.

Approach

IFD staff members create a prioritized list of potential survey sites. As many waterbodies as resources permit are surveyed within a given year. Surveys are typically conducted during the open water fishing season (Opening Day in April – October) and the ice fishing season (periods of safe ice during December – March).

Lake surveys employ a standardized stratified random roving design (Malvestuto et al. 1978). Large river surveys are often customized and may employ roving designs, access point designs (Pollock et al. 1994), or some combination of the two approaches. Standard open water surveys are typically conducted from Opening Day (3rd Saturday in April) until the end of October during the daylight hours between dawn and dusk. Ice season surveys are conducted from dawn to dusk during periods of safe ice, which typically occur from mid-December through the

beginning of March. Open water and ice surveys are occasionally conducted after dark at lakes that support night fisheries for species such as Walleye and Channel Catfish. On a given survey day, survey clerks travel to the waterbody, count the number of anglers present, and then interview anglers using a standardized questionnaire. All survey data are entered into centralized databases.

All surveys quantify angler effort (expressed as “angler-hrs”, or hours of fishing that occur over the course of the season; one angler-hour = one angler fishing for one hour, two anglers fishing for three hours = six angler-hrs, etc.) as well as catch (numbers of fish caught by anglers) and harvest (numbers of fish caught that are kept). Surveys also quantify directed effort (the percentage and/or number of angler-hrs spent in pursuit of particular species) and catch rates (the number of a species caught per angler-hr of fishing). Anglers may also be asked questions to assess their avidity (number of fishing trips taken annually to the waterbody), monetary expenditures for their fishing trip, and opinions of current or prospective IFD management programs.

Key Findings

IFD conducted angler surveys on 12 lakes during 2014-15 (Fig. 1, Appendix 1). Only West Hill Pond was surveyed during both the open water and ice seasons. Mansfield Hollow Reservoir, Pachaug Pond, and Winchester Lake were surveyed during ice season only; the eight remaining lakes were surveyed during open water only. Angler effort, catch and harvest, and directed effort at each lake are shown in Appendices 2-4.



Figure 1. Lakes where angler surveys were conducted during 2014-15.

Total open water angler effort at lakes surveyed during 2014 ranged from a low of 2,601 angler-hrs at Pattaconk Lake to a high of 18,817 angler-hrs at Gardner Lake (Appendix 2). The relative proportions of shore angler vs. boat angler effort varied among lakes: Batterson Park Pond, Black Pond, Lakewood Lake, Pattaconk Lake, and Lake Wintergreen were pre-dominantly shore fisheries, whereas Gardner Lake, Mashapaug Lake, and West Hill Pond were primarily used by

boat anglers (angler effort at Lower Bolton Lake was relatively similar between boat and shore anglers).

Bass and trout species were the primary target species during the open water season at all lakes surveyed in 2014 (Appendix 4). Bass accounted for a substantial percentage of directed effort at Batterson Park Pond (26%), Gardner Lake (65%), Lakewood Lake (23%), Lower Bolton Lake (39%), Mashapaug Lake (55%), and Pattaconk Lake (35%). Trout accounted for substantial directed effort at Black Pond (47%), Pattaconk Lake (29%), West Hill Pond (44%), and Lake Wintergreen (29%). Channel Catfish fisheries attracted considerable angler effort at Lakewood Lake (14% of all angler effort), Lower Bolton Lake (25%), and Lake Wintergreen (16%), but were somewhat less utilized at Black Pond (8%) and Pattaconk Lake (4%; see Channel Catfish Management Report for more details on these fisheries). Common Carp were the target of a substantial shore fishery at Batterson Park Pond (18% of all angler effort, all of which occurred from shore). The Kokanee Salmon fishery at West Hill Pond also attracted substantial angler participation (22% of all angler effort). Walleye generally accounted for low percentages of open water directed effort at the three Walleye Management Lakes surveyed (Batterson Park Pond: 7%; Gardner Lake: 2%; Mashapaug Lake: 5%). Generalists seeking “anything” accounted



Jimmy Stearns with an 18 lb. Seeforellen Brown Trout caught through the ice on 1/18/15 at an undisclosed Connecticut lake. IFD stocked these large Brown Trout into a selected number of lakes in mid-December in the hopes of producing memorable ice fishing catches such as this one.

for a substantial portion of angler effort in all lakes during the open water season (20-58%).

Ice anglers enjoyed a prolonged period of safe ice during January-March at Mansfield Hollow Reservoir, Pachaug Pond, West Hill Pond, and Winchester Lake (safe ice days range: 82-90 days; see Appendix 2). Northern Pike were the most popular target species for ice anglers at the three Pike

Management Lakes surveyed (Mansfield Hollow Reservoir, Pachaug, and Winchester), accounting for 43-91% of directed effort (Appendix 4). At West Hill Pond, the majority of ice anglers targeted trout (78% of directed effort).

Gamefish harvest rates (percentages of fish caught that are kept) varied considerably by species during open water at lakes surveyed in 2014 (see Appendix 3). Harvest rates for Largemouth and Smallmouth Bass, Chain Pickerel and Walleye were 5% or less, with the exceptions of

Largemouth Bass at Lake Wintergreen (14%, although this estimate is based on only four harvested bass observed during the creel survey, and is therefore imprecise) and Walleye at Mashapaug Lake (35%, although only an estimated total of six Walleye were harvested during the entire open water season). Conversely, harvest rates for trout species in aggregate (“All trout” harvest estimates in Appendix 3) ranged from 51-80% among lakes, and 89% of Kokanee Salmon caught at West Hill Pond were harvested. Harvest rates for Channel Catfish varied widely among lakes (11-68%). Harvest rates for “panfish” such as Yellow Perch, Black Crappie, White Perch, Rock Bass, catfish species other than Channel Catfish, and sunfish species varied but were typically less than 30% during open water. Harvest rates at the four lakes surveyed during ice season followed the same general pattern as outlined above for open water (low for large gamefish other than trout, somewhat higher but generally <30% for panfish), with the exception of relatively high harvest rates for panfish at Pachaug Pond (Appendix 3).

Discussion

Angler surveys conducted during 2014-15 highlight the diversity of inland fishing opportunities available in Connecticut. Many of the lakes surveyed during 2014-15 demonstrate the success of IFD stocking programs in creating fisheries for Kokanee, trout, Channel Catfish, Northern Pike, and Walleye. Angler surveys will continue to be an important means by which IFD can document the variety and quality of inland angling opportunities available in Connecticut.



Chris Finch with a 28 inch Channel Catfish caught at Lower Bolton Lake. IFD initiated a Channel Catfish stocking program in 2007. This program has proved to be quite popular with Connecticut anglers and has produced good catfish angling at Lower Bolton Lake and a number of other locations statewide.

Expenditures

Total Cost:	\$146,050
Federal Share:	\$109,537
State Share:	\$36,512

References

- Jacobs, R.P., E.B. O'Donnell, T.J. Barry, J.P. Davis, W. Foreman, G.H. Leonard, and C. McDowell. 2011. Warmwater Fisheries Management - Job 3: Monitor warmwater fish populations in lakes, ponds and large rivers, and Job 4: Assessment of new bass regulations. Final report (F57R29). Conn. D.E.P. Bureau of Natural Resources, Inland Fisheries Division, Hartford, CT. 148p.
- Malvestuto, S. P., W. D. Davies, and W. L. Shelton. 1978. An evaluation of the roving creel survey with nonuniform probability sampling. Transactions of the American Fisheries Society 107:255-262.
- Pollock, K. H., C. M. Jones, and T. L. Brown. 1994. Angler survey methods and their applications in fisheries management. American Fisheries Society Special Publication 25, Bethesda, MD USA.

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Appendices

Appendix 1. Lakes where Inland Fisheries Division conducted angler surveys during 2014-15.

Lake	Towns	Area (acres)	Public Boat Access	Public Shore Access	Special Management	Prior Angler Surveys?	Primary Rationale	Comments
Batterson Park Pond	Farmington, New Britain	140	State-leased paved ram, parking for 25 cars	Excellent – most of the shoreline is open to public	Walleye Management Lake ¹ , Channel Catfish Management Lake ²	One previous survey in 2010	Walleye and Channel Catfish assessment	Internal combustion engines prohibited; open water survey only in 2014; Batterson is currently closed to ice fishing, but may be opened to year-round fishing in 2015
Black Pond	Meriden, Middlefield	76	State-owned gravel ramp, parking for 10 cars	Fair – access at boat launch and from hiking trail along east shore	Bass Management Lake ³ , Channel Catfish Management Lake ²	One previous survey in 2010	Channel Catfish assessment	Internal combustion engines prohibited; open water survey only in 2014
Gardner Lake	Salem, Montville, Bozrah	529	State-owned paved ramp, parking for 54 cars	Fair – access at boat launch, dam, and Hopemead State Park	Spring and fall trout stocking, Bass Management Lake ³ , Walleye Management Lake ¹	Multiple surveys dating back to 1993	Walleye and supplemental bass stocking ⁴ assessment	Open water survey only in 2014 (lake was surveyed during preceding 2013-14 ice season)
Lakewood Lake	Waterbury	73	No boat launch, informal carry-in access from Lakewood Park	Good – access in Lakewood Park, along Lakewood Rd. and Farmwood Rd.	Community Fishing Water ⁵	None	Channel Catfish assessment	Lakewood Lake is also known as Great Brook Reservoir; open water survey only in 2014

Appendix 1 (continued)

Lake	Towns	Area (acres)	Public Boat Access	Public Shore Access	Special Management	Prior Angler Surveys?	Primary Rationale	Comments
Lower Bolton Lake	Bolton, Vernon	175	State-owned paved ramp, parking for 30 cars	Fair – access at boat launch and along both dams	Bass Management Lake ³ , Channel Catfish Management Lake ²	Prior surveys in 2005 and 2010	Channel Catfish assessment	Motors limited to 6 hp; open water survey only in 2014
Mansfield Hollow Reservoir	Mansfield, Windham	460	Paved ramp, parking for 50 cars	Excellent - entire shoreline is open to public	Bass Management Lake ³ , Northern Pike Management Lake ⁶	Multiple surveys dating back to 1993	Northern Pike assessment	8 mph speed limit; ice season survey only in 2014-15
Mashapaug Lake	Union	287	State-owned paved ramp, parking for 15 cars	Fair – access in Bigelow Hollow State Park and Nipmuck State Forest	Spring and fall trout stocking, Bass Management Lake ³ , Walleye Management Lake ¹	Multiple surveys dating back to 2004	Walleye assessment	10 mph speed limit; open water survey only in 2014 (lake was surveyed during preceding 2013-14 ice season)
Pachaug Pond	Griswold	841	State-owned paved ramp, parking for 40 cars	Poor – access at boat launch, in Pachaug State Forest, along Rte 165 causeway	Northern Pike Management Lake ⁶	Multiple surveys dating back to 1999	Northern Pike assessment	Ice season survey only in 2014-15

Appendix 1 (continued)

Pattaconk Lake	Chester	56	No boat launch, carry-in access on south shore from State Forest Rd.	Excellent – entire shoreline is accessible to public	Spring and fall trout stocking, Channel Catfish Management Lake ²	None	Channel Catfish assessment	8 mph speed limit; internal combustion engines prohibited during July-August; open water survey only in 2014
West Hill Pond	Barkhamsted, New Hartford	261	State-owned paved ramp, parking for 20 cars	Poor – access at boat launch only	Trout Management Lake ⁷ , Kokanee Management Lake ⁸	One prior survey during March 2012	Trout and Kokanee assessment	15 mph speed limit; Memorial Day – September 15 th motors limited to 8 hp; open water survey only in 2014 (lake was surveyed during preceding 2013-14 ice season)
Winchester Lake	Winchester	246	State-owned paved ramp, parking for 25 cars	Poor – access at boat launch and dam only	Northern Pike Management Lake ⁶	One prior survey in 2008	Northern Pike assessment	8 mph speed limit; ice season survey only in 2014-15
Lake Wintergreen	Hamden	44	No boat launch, carry-in access from parking lot off Main St.	Excellent - most of the shoreline is open to public	Community Fishing Water ⁵	One prior survey in 2008	Channel Catfish assessment	Internal combustion engines prohibited; open water survey only in 2014

¹ Walleye Management Lakes are stocked annually with Walleye fingerlings; see Walleye Management Report

² Channel Catfish Management Lakes are stocked annually with yearling and/or adult Channel Catfish; see Channel Catfish Management Report

³ Bass Management Lakes are managed with specialized bass regulations; see Bass Management Report

⁴ IFD initiated a supplemental bass stocking study in 2012; see Bass Management Report

⁵ Community Fishing Waters are small waters in urban locales that receive annual spring stockings of trout and Channel Catfish

⁶ Northern Pike Management Lakes are stocked annually with northern pike fingerlings; see Northern Pike Management Report

⁷ Trout Management Lakes are managed with specialized trout stocking regimes and regulations; see Coldwater Lakes Management Report

⁸ Kokanee Management Lakes are stocked annually with Kokanee Salmon fry; see Coldwater Lakes Management Report

Appendix 2. Estimated **angler effort** (angler-hrs) at lakes surveyed during the 2014 open water season (4/19-10/31/14) and subsequent 2014-15 ice fishing season (periods of safe ice during December-March 2014-15). The \pm 95% confidence limits around effort estimates are shown in parentheses, expressed as a percentage of the effort estimate (e.g. an entry of “1,000 (50%)” represents an effort estimate of 1,000 angler-hrs with a 95% confidence limit of \pm 500 angler-hrs). The columns labeled “**Eff/acre**” contain the open water or ice angler effort per acre for each lake. The column labeled “**Ice Days**” contains the number of days of safe ice at each lake during the ice fishing season. The column labeled “**EA/Day**” contains the ice angler effort per acre per day of safe ice for each lake. Entries of “**N/A**” indicate the lake was not surveyed during that season.

Lake	Area (AC)	Open Water Season				Ice Season			
		Boat	Shore	Total	Eff/acre	Ice	Eff/acre	Ice Days	EA/Day
Batterson Park P.	140	2,616 (26%)	7,445 (36%)	10,061 (28%)	72	N/A	N/A	N/A	N/A
Black P.	76	3,895 (29%)	11,489 (16%)	15,384 (15%)	202	N/A	N/A	N/A	N/A
Gardner L.	529	15,655 (17%)	3,162 (38%)	18,817 (15%)	36	N/A	N/A	N/A	N/A
Lakewood L.	73	763 (58%)	7,934 (19%)	8,697 (18%)	119	N/A	N/A	N/A	N/A
Lower Bolton L.	175	5,562 (22%)	6,534 (23%)	12,096 (18%)	69	N/A	N/A	N/A	N/A
Mansfield Hollow Res.	460	N/A	N/A	N/A	N/A	1,981 (41%)	4	84	0.05
Mashapaug L.	287	11,424 (17%)	1,866 (38%)	13,290 (15%)	46	N/A	N/A	N/A	N/A
Pachaug P.	841	N/A	N/A	N/A	N/A	5,242 (32%)	6	83	0.08
Pattaconk L.	56	947 (45%)	1,654 (31%)	2,601 (27%)	46	N/A	N/A	N/A	N/A
West Hill P.	261	14,708 (17%)	2,177 (32%)	16,885 (16%)	65	4,459 (33%)	17	82	0.21
Winchester L.	246	N/A	N/A	N/A	N/A	2,328 (63%)	9	90	0.11
L. Wintergreen	44	700 (46%)	7,374 (19%)	8,074 (18%)	184	N/A	N/A	N/A	N/A

Appendix 3. Estimated catch (number of fish), harvest (number of fish), and harvest rate (percentage of fish caught that were harvested) at lakes surveyed during the 2014 open water season (4/19-10/31/14) and subsequent 2014-15 ice fishing season (periods of safe ice during December-March 2014-15). The \pm 95% confidence interval (C.I.) around catch or harvest estimates are shown in parentheses, expressed as a percentage of the catch or harvest estimate (e.g. an entry of “1,000 (50%)” represents an estimate of 1,000 fish caught or harvested with a 95% confidence interval of \pm 500 fish). Catch of individual sunfish and catfish species (with the exception of Channel Catfish at Channel Catfish Management Lakes) are not reported because most anglers cannot reliably identify sunfish and catfish to species. In lakes with relatively low estimated trout catches, catch and harvest of individual trout species are not reported separately.

Batterson Park Pond (open water survey only)

	Open Water Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	819 (45%)	16 (142%)	2%
Smallmouth Bass	78 (145%)	0	0%
Walleye	199 (86%)	10 (158%)	5%
Channel Catfish	65 (104%)	8 (207%)	12%
Common Carp	162 (162%)	83 (161%)	51%
Black Crappie	105 (83%)	32 (131%)	30%
Yellow Perch	648 (49%)	156 (80%)	24%
White Perch	404 (81%)	189 (122%)	47%
Other catfish ¹	201 (93%)	94 (146%)	47%
Rock Bass	202 (148%)	0	0%
All sunfish ²	1,799 (54%)	246 (99%)	14%
Bluegill	-	241 (100%)	-
Pumpkinseed	-	5 (201%)	-
¹ Species other than Channel Catfish; anglers reported catching Brown Bullheads and “catfish”, Brown Bullheads were documented by clerks; it is possible that some of the caught and released “catfish” were Channel Catfish.			
² Anglers reported catching Bluegills, Pumpkinseeds, and “sunfish”; Bluegills and Pumpkinseeds were documented by clerks.			

Appendix 3 (continued)

Black Pond (open water survey only)

Species	Open Water Season		
	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	1,539 (61%)	8 (209%)	1%
Smallmouth Bass	6 (201%)	0	0%
Chain Pickerel	307 (100%)	0	0%
All trout	2,451 (45%)	1,891 (49%)	77%
Brown Trout	1,490 (74%)	1,074 (88%)	72%
Rainbow Trout	937 (34%)	817 (38%)	87%
Brook Trout	24 (210%)	0	0%
Channel Catfish	147 (60%)	16 (228%)	11%
Black Crappie	53 (209%)	0	0%
Yellow Perch	43 (224%)	0	0%
Other catfish ¹	64 (171%)	14 (228%)	22%
All sunfish ²	4,421 (49%)	202 (169%)	5%
Bluegill	-	194 (175%)	-
Pumpkinseed	-	8 (209%)	-
¹ Species other than Channel Catfish; anglers reported catching Brown Bullheads; Brown Bullheads were documented by clerks.			
² Anglers reported catching Bluegills, Pumpkinseeds and “sunfish”; Bluegills and Pumpkinseeds were documented by clerks.			

Appendix 3 (continued)

Gardner Lake (open water survey only)

Species	Open Water Season		
	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	8,571 (31%)	0	0%
Smallmouth Bass	678 (50%)	20 (207%)	3%
Walleye	51 (171%)	0	0%
Chain Pickerel	6,181 (39%)	21 (212%)	<1%
All trout	969 (34%)	764 (37%)	79%
Brown Trout	595 (30%)	515 (33%)	87%
Rainbow Trout	342 (71%)	232 (98%)	68%
Brook Trout	32 (143%)	17 (212%)	53%
Black Crappie	393 (73%)	84 (207%)	21%
Yellow Perch	1,968 (54%)	272 (168%)	14%
All catfish ¹	111 (726%)	29 (367%)	26%
All sunfish ²	5,760 (46%)	450 (115%)	8%
Bluegill	-	399 (121%)	-
Pumpkinseed	-	51 (142%)	-
¹ Anglers reported catching Channel Catfish, White Catfish, and Brown Bullheads; Channel Catfish and White Catfish were documented by clerks.			
² Anglers reported catching Bluegills, Pumpkinseeds and “sunfish”; Bluegills and Pumpkinseeds were documented by clerks.			

Appendix 3 (continued)

Lakewood Lake (open water survey only)

	Open Water Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	1,352 (83%)	71 (142%)	5%
Chain Pickerel	138 (116%)	0	0%
Channel Catfish	439 (60%)	248 (72%)	56%
Black Crappie	125 (87%)	27 (146%)	22%
Yellow Perch	642 (96%)	37 (151%)	6%
White Perch	58 (103%)	16 (203%)	28%
All sunfish ¹	3,003 (59%)	550 (87%)	18%
Bluegill	-	514 (92%)	-
Pumpkinseed	-	8 (207%)	-
Redbreast	-	8 (207%)	-
¹ Anglers reported catching Bluegills, Pumpkinseeds, Redbreast Sunfish, and “sunfish”; Bluegills, Pumpkinseeds, and Redbreast Sunfish were documented by clerks. “All sunfish” harvest estimate is greater than sum of individual species harvest estimates because one interviewed angler had harvested a sunfish of unknown species to use as bait.			

Lower Bolton Lake (open water survey only)

	Open Water Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	4,329 (32%)	177 (97%)	4%
Smallmouth Bass	311 (95%)	0	0%
Chain Pickerel	398 (62%)	11 (209%)	3%
Channel Catfish	842 (66%)	262 (99%)	31%
Black Crappie	2,757 (52%)	727 (128%)	26%
Yellow Perch	1,364 (100%)	102 (128%)	7%
Other catfish ¹	856 (90%)	299 (250%)	35%
All sunfish ²	7,730 (55%)	1,048 (122%)	14%
Bluegill	-	841 (135%)	-
Pumpkinseed	-	167 (102%)	-
Green	-	40 (203%)	-
¹ Species other than Channel Catfish; anglers reported catching Brown Bullheads and Yellow Bullheads; Yellow Bullheads were documented by clerks.			
² Anglers reported catching Bluegills, Pumpkinseeds, Green Sunfish, and “sunfish”; Bluegills, Pumpkinseeds, and Green Sunfish were documented by clerks.			

Appendix 3 (continued)

Mansfield Hollow Reservoir (ice season survey only)

	Ice Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	65 (206%)	0	0%
Northern Pike	83 (68%)	2 (203%)	2%
Chain Pickerel	48 (95%)	16 (206%)	33%
Yellow Perch	304 (134%)	161 (150%)	53%
All sunfish ¹	29 (203%)	0	0%
¹ Anglers reported catching “sunfish”; no harvested sunfish were observed by clerks.			

Mashapaug Lake (open water survey only)

	Open Water Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	4,736 (36%)	0	0%
Smallmouth Bass	1,465 (109%)	0	0%
Walleye	17 (151%)	6 (313%)	35%
Chain Pickerel	174 (61%)	0	0%
All trout ¹	1,973 (57%)	1,322 (58%)	67%
Brown Trout	1,340 (72%)	901 (69%)	67%
Rainbow Trout	597 (54%)	385 (69%)	64%
Brook Trout	37 (104%)	37 (104%)	100%
Black Crappie	5 (238%)	0	0%
Yellow Perch	783 (47%)	242 (118%)	31%
All sunfish ²	2,145 (46%)	437 (114%)	20%
Bluegill	-	377 (130%)	-
Pumpkinseed	-	60 (207%)	-
¹ “All trout” catch and harvest estimates differ slightly from sums of individual species estimates due to rounding.			
² Anglers reported catching Bluegills, Green Sunfish, Pumpkinseeds, and “sunfish”; Bluegills and Pumpkinseeds were documented by clerks.			

Appendix 3 (continued)

Pachaug Pond (ice season survey only)

	Ice Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	127 (71%)	11 (203%)	9%
Northern Pike	116 (63%)	0	0%
Chain Pickerel	278 (87%)	0	0%
Black Crappie	19 (193%)	18 (203%)	95%
Yellow Perch	204 (91%)	50 (148%)	25%
White Perch	36 (110%)	21 (172%)	58%
All catfish ¹	66 (81%)	20 (140%)	30%
All sunfish ²	9 (143%)	5 (207%)	56%
Bluegill	-	5 (207%)	-
¹ Anglers reported catching Brown Bullheads and White Catfish; White Catfish were documented by clerks.			
² Anglers reported catching Bluegills and Pumpkinseeds; Bluegills were documented by clerks.			

Pattaconk Lake (open water survey only)

	Open Water Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	825 (61%)	13 (-) ¹	2%
Chain Pickerel	19 (63%)	0	0%
Channel Catfish	31 (112%)	21 (142%)	68%
All trout	276 (50%)	221 (45%)	80%
Brown trout	58 (161%)	58 (161%)	100%
Rainbow trout	218 (50%)	163 (26%)	75%
Yellow Perch	92 (143%)	14 (208%)	15%
All sunfish ²	815 (79%)	13 (-) ¹	2%
Bluegill	-	13 (-) ¹	-
¹ Confidence limits non-estimable because the only harvest recorded during the survey occurred in the Opening Day stratum, in which there was only one sample; when n=1 variance is non-estimable.			
² Anglers reported catching Bluegills and “sunfish”; Bluegills were documented by clerks.			

Appendix 3 (continued)

West Hill Pond

	Open Water Season			Ice Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	3,225 (60%)	0	0%	42 (82%)	0	0%
Smallmouth Bass	117 (77%)	0	0%	0	0	-
Chain Pickerel	211 (109%)	3 (203%)	1%	449 (56%)	0	0%
All trout	8,066 (22%)	4,101 (29%)	51%	1,567 (82%)	217 (75%)	14%
Brown Trout	5,887 (20%)	2,914 (26%)	49%	1,215 (87%)	138 (78%)	11%
Rainbow Trout	1,750 (38%)	988 (53%)	56%	147 (63%)	72 (104%)	49%
Brook Trout	429 (71%)	199 (77%)	46%	205 (121%)	7 (203%)	3%
Kokanee Salmon	782 (67%)	694 (74%)	89%	0	0	-
Black Crappie	21 (205%)	0	0%	13 (206%)	0	0%
Yellow Perch	274 (134%)	10 (205%)	4%	0	0	-
Rock Bass	999 (93%)	0	0%	16 (150%)	0	0%
All sunfish ¹	2,931 (45%)	231 (186%)	8%	0	0	-
Bluegill	-	23 (228%)	-	-	0	-
Pumpkinseed	-	208 (205%)	-	-	0	-
¹ Anglers reported catching Bluegills, Pumpkinseeds, Redbreast Sunfish, and “sunfish”; Bluegills and Pumpkinseeds were documented by clerks.						

Winchester Lake (ice season survey only)

	Ice Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	85 (100%)	4 (204%)	5%
Northern Pike	84 (68%)	0	0%
Chain Pickerel	229 (73%)	0	0%
Black Crappie	9 (204%)	0	0%
Yellow Perch	56 (90%)	20 (204%)	36%
All catfish ¹	10 (141%)	0	0%
Rock Bass	14 (204%)	0	0%
All sunfish ²	24 (118%)	0	0%
¹ Anglers reported catching Brown Bullheads; no harvested catfish were observed by clerks.			
² Anglers reported catching Bluegills and “sunfish”; no harvested sunfish were observed by clerks.			

Appendix 3 (continued)

Lake Wintergreen (open water survey only)

	Open Water Season		
Species	Catch (95% C.I.)	Harvest (95% C.I.)	Harvest Rate
Largemouth Bass	873 (45%)	124 (131%)	14%
All trout	1,498 (50%)	1,029 (61%)	69%
Brown Trout	97 (83%)	71 (102%)	73%
Rainbow Trout	1,375 (51%)	932 (64%)	68%
Brook Trout	8 (204%)	8 (204%)	100%
Tiger Trout	18 (147%)	18 (147%)	100%
Channel Catfish	369 (75%)	247 (85%)	67%
Yellow Perch	39 (160%)	0	0%
All sunfish ¹	2,769 (57%)	1,057 (94%)	38%
Bluegill	-	1,017 (97%)	-
Pumpkinseed	-	41 (113%)	-
¹ Anglers reported catching Bluegills and “sunfish”; only Bluegills were documented.			

Appendix 4. Directed effort (angler-hrs) for various species at lakes surveyed during the 2014 open water season (4/19/14-10/31/14) and subsequent 2014-15 ice fishing season (periods of safe ice during December-March 2014-15). **“Bass”** directed effort includes all effort targeting Largemouth Bass and/or Smallmouth Bass. **“Trout”**, **“Catfish”**, and **“Sunfish”** directed effort includes all effort targeting all trout species, all catfish species and all sunfish species, respectively. **“Anything”** directed effort reflects generalist angler effort not directed towards any particular species (i.e. anglers who are fishing for “anything”, “whatever they can catch”, etc.). “Effort (%)” columns may sum to slightly more or less than 100% due to rounding.

Batterson Park Pond (open water survey only)

Species	Open Water Season	
	Effort (hrs)	Effort (%)
Bass	2,625	26
Walleye	704	7
Catfish	423	4
Carp	1,839	18
Black Crappie	24	<1
Yellow Perch	125	1
White Perch	96	1
Sunfish	686	7
“Anything”	3,538	35

Black Pond (open water survey only)

Species	Open Water Season	
	Effort (hrs)	Effort (%)
Bass	1,966	13
Trout	7,236	47
Catfish	1,214	8
Sunfish	55	<1
“Anything”	4,913	32

Gardner Lake (open water survey only)

Species	Open Water Season	
	Effort (hrs)	Effort (%)
Bass	12,314	65
Walleye	344	2
Trout	1,110	6
Catfish	1,024	5
Yellow Perch	19	<1
“Anything”	4,005	21

Appendix 4 (continued)**Lakewood Lake (open water survey only)**

	Open Water Season	
Species	Effort (hrs)	Effort (%)
Bass	1,967	23
Trout	17	<1
Catfish	1,232	14
Black Crappie	352	4
Sunfish	105	1
“Anything”	5,023	58

Lower Bolton Lake (open water survey only)

	Open Water Season	
Species	Effort (hrs)	Effort (%)
Bass	4,678	39
Catfish	3,001	25
Black Crappie	133	1
Sunfish	389	3
“Anything”	3,896	32

Mansfield Hollow Reservoir (ice season survey only)

	Ice Season	
Species	Effort (hrs)	Effort (%)
Northern Pike	1,800	91
Yellow Perch	48	2
“Anything”	133	7

Appendix 4 (continued)**Mashapaug Lake (open water survey only)**

	Open Water Season	
Species	Effort (hrs)	Effort (%)
Bass	7,267	55
Walleye	626	5
Trout	1,851	14
Yellow Perch	67	1
Sunfish	103	1
“Anything”	3,376	25

Pachaug Pond (ice season survey only)

	Ice Season	
Species	Effort (hrs)	Effort (%)
Bass	41	<1
Northern Pike	4,498	86
Yellow Perch	3	<1
“Anything”	700	13

Pattaconk Lake (open water survey only)

	Open Water Season	
Species	Effort (hrs)	Effort (%)
Bass	905	35
Trout	746	29
Catfish	116	4
Sunfish	14	1
“Anything”	821	32

Appendix 4 (continued)**West Hill Pond (open water survey only)**

Species	Open Water Season		Ice Season	
	Effort (hrs)	Effort (%)	Effort (hrs)	Effort (%)
Bass	2,045	12	0	0
Trout	7,363	44	3,476	78
Kokanee	3,795	22	0	0
Sunfish	318	2	0	0
“Anything”	3,364	20	983	22

Winchester Lake (ice season survey only)

Species	Ice Season	
	Effort (hrs)	Effort (%)
Bass	351	15
Northern Pike	1,000	43
“Anything”	977	42

Lake Wintergreen (open water survey only)

Species	Open Water Season	
	Effort (hrs)	Effort (%)
Bass	1,561	19
Trout	2,329	29
Catfish	1,321	16
Black Crappie	19	1
Sunfish	431	5
“Anything”	2,413	30